AMENDMENTS TO THE SPECIFICATION:

Please amend the specification as indicated below.

Please amend paragraph **[0017]** as follows:

[0017] As a result, parallel streams of serial data bits are separated into separate subsets which are transmitted on different frequency bands to form separate channels on the transmission medium. Therefore, the data rate and the symbol rate transmitted in each of the separate channels can be much lower than the overall data transmission rate. The lower data rate and symbol rate in each channel provides for simpler receiver processing with many fewer problems (e.g., speed of components utilized for equalization and data recovery) than the high data rate transmissions. In addition, because the symbol rates are lower, the amount of receiver equalization needed on each of the K channels can be smaller, and can be implemented with a simpler equalization ~~structures~~ structure. Because of the lower symbol rates, receiver signals can be processed with complex, optimal algorithms.

Please amend paragraph **[0018]** as follows:

[0018] In some embodiments, the transmission into each of the available transmission channels can be bit-loaded so that the channels occupying the lower part of the frequency spectrum can be modulated with higher order symbol constellations to provide higher bit throughput per modulated symbol in those channels. Conversely, the channels occupying the higher carrier frequencies can be modulated with lower order symbol constellations to provide lower numbers of bits per modulated symbol. By performing bit-loading, the data throughput that can be achieved over the transmission medium, for example a copper based interconnect system, can be maximized because the signal-to-noise ratio (SNR) available in the channel is higher at lower frequencies in the channel than in the higher frequencies. Thus, the bit-loaded transmission technique can be tailored to maximize the overall capacity of a copper based interconnect system. In embodiments with QAM symbol constellations, for example, QAM constellations with more symbols (and therefore which can carry more bits per symbol) can be transmitted in channels with lower carrier frequencies while QAM constellations with fewer symbols (and therefore representing fewer bits per symbol) can be transmitted in channels with higher carrier frequencies.

Please amend paragraph **[0036]** as follows:

[0036]　　　　　Figure 6E shows a̲ raised cosine filter response.

Please amend paragraph **[0038]** as follows:

[0038]　　　　　Figures 8A and 8B s̶h̶o̶w̶s̶ show a̲ block diagram of an embodiment of an automatic gain control circuit of a receiver demodulator according to the present invention.

Please amend paragraph **[0044]** as follows:

[0044]　　　　　Transmission channel 250 can represent any transmission channel, including optical channels, wireless channels, or metallic conductor channels such as copper wire or FR4 copper traces. Typically, transmission channel 250 attenuates higher frequency signals more than l̶o̶w̶e̶r̶ low̲ frequency signals. As a result, intersymbol interference problems are greater for high data rate transmissions than for lower data rate transmissions. In addition, cross-talk from neighboring signals increases with transmission frequency.